

REMARKS

The present amendment is in response to the Office Action dated May 1, 2006. Claims 1-16 and 60-65 are now present in this case. Claims 2, 9, and 60 are amended.

Claims 1, 5-6, 8, and 64 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,867,485 to Chambers et al., U.S. Patent No. 5,425,050 to Schreiber et al., and a publication by Engels et al. The applicants respectfully traverse this rejection and request reconsideration. The Office Action notes that the primary reference, Chambers et al., does not disclose base stations having a coverage area between 1 and 10 miles, nor consumer premise equipment (CPE) having an internally deployed antenna. The Office Action asserts that Schreiber et al. "in the field of communications, discloses a base station having a transceiver transmitting with enough power such that the transmission radius is more than 1 mile and less than 10 miles." (See Office Action, page 9.) This is not correct. At the outset, it should be noted that Schreiber et al. never discloses a "transceiver" because Schreiber et al. is not directed to a bidirectional communication system. As discussed in previous responses, Schreiber et al. is directed to a long-range one-way television transmission system using OFDM technology. The Office Action states that it would be obvious to combine Chambers et al. and Schreiber et al. "with the motivation being to provide a larger coverage area than a lower power transceiver such that signals may be sent and received over a greater distance." (See Office Action, page 9.)

The Office Action cites Engels as disclosing a wireless OFDM communication system using non-line-of-sight antennas for radio transmissions in an indoor environment and states that it would have been obvious to combine the OFDM wireless communication system of Engels with the combined system and method of Chambers and Schreiber "with the motivation being to allow transmitters to be more flexibly placed without having to provide a line-of-sight between the transmitters and the base stations." (See Office Action, p. 10.)

The Office Action appears to apply the references in a piecemeal fashion to suggest particular elements in claim 1 rather than any combination of references that

suggests claim 1 as a whole. It is a well settled rule that the Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. (See M.P.E.P. § 2142.) The applicants note that the disparate references provide no suggestion for the combination cited in the Office Action. Under the M.P.E.P. standards, any alleged motivation to combine or modify references must be objectively verifiable. The M.P.E.P. recognizes the pitfalls associated with the tendency to subconsciously use impermissible “hindsight” when an examiner attempts to establish such a rationale. The M.P.E.P. has set forth at least two rules to ensure against the likelihood of such impermissible use of hindsight. The first rule is that “under 35 U.S.C. § 103, the examiner must step backward in time and into the shoes worn by the hypothetical ‘person of ordinary skill in the art’ when the invention was unknown and just before it was made. Secondly, in view of all factual information, the examiner must then make a determination whether the claimed invention ‘as a whole’ would have been obvious at that time to that person.” (See M.P.E.P. § 2142, emphasis added.)

The applicants respectfully point out that nowhere has the Office Action pointed to any objectively verifiable motivation to modify and/or combine the teachings of Chambers, Schreiber and/or Engels to produce the claimed invention beyond the bare assertion that one would be motivated to combine Chambers and Schreiber to “provide a larger coverage area than a lower power transceiver.” (See Office Action, page 9.) This assertion also ignores the fact that the system of Chambers et al. is entirely designed as a low-power short-range bi-directional communication network while the system of Schreiber et al. is designed as a one-way television transmission system.

As has been discussed in detail above, Chambers and Schreiber are directed to disparate wireless technologies. Chambers is a low power microcellular two-way communication system while Schreiber discloses a higher power one-way television transmitter system. The differences in technologies are recognized by the Patent Office in classifying Chambers and Schreiber in completely different classifications and fields of search. There are no overlapping classification or fields of search between Chambers et al. and Schreiber et al. Thus, the Patent Office

recognizes that the disclosures are directed to two different technologies. Furthermore, there is nothing in either reference to suggest the combination cited in the Office Action.

Similarly, the Office Action makes a bare assertion that Engels et al. discloses non-line-of-sight antennas and that it would be obvious to combined Engels et al. with Chambers et al. and Schreiber et al. to “allow transmitters to be more flexibly placed.” Engels is cited for disclosing an internally deployed antenna even though it clearly never discloses any antenna at all. Furthermore, Engels does not describe an actual circuit, but a proposed hypothetical circuit whose performance is based on modeling. Because Engels does not describe an actual device, performance characteristics are somewhat conjectural. However, the introduction of Engels proposes a high-speed replacement for IEEE 802.11 devices. It is well known that IEEE 802.11 is directed to a very short-range wireless system with a range of 10 to 50 meters. (See IEEE 802.11g.) Thus, the antenna system of Engels is clearly not intended to operate in the range of 1-10 miles, as recited in claim 1.

None of the references provide a suggestion for the combination recited in the Office Action. Accordingly, the applicants respectfully request that the Examiner point to objectively verifiable evidence or supply an affidavit setting forth the objectively verifiable evidence of such motivation to combine or modify. In the absence of objectively verifiable motivation to modify and/or combine the art of record to reach the applicants’ claims at issue, no *prima facie* case of obviousness has been established. Accordingly, the applicants respectfully request that the Examiner allow claims 1, 5, 6, 8 and 64 for at least this reason.

Even if one were to combine the references in the manner described in the Office Action, they do not teach or suggest the claimed invention. Chambers is directed to a short-range bidirectional system while Schreiber et al. is directed to a long-range one-way transmission system. The wireless modem described in Engels is a replacement for a very short-range wireless network, such as IEEE 802.11. The three references combined do not teach or suggest base stations having a coverage area with a radius of more than 1 mile in less than 10 miles and a plurality of consumer premise equipment (CPE) “assigned to each base station and located at a premise within the corresponding coverage area of that base station, each CPE being configured

for communication with that base station to which it is assigned and having an antenna deployed internally within the premise where the CPE is located,” as recited in claim 1. Engels, which was cited in the Office Action as disclosing an internal antenna for non-line-of-sight communication, is incapable of operation at the distances required by claim 1. Nothing in Engels suggests a communication capability with a base station that is 1 to 10 miles away. Thus, claim 1 is clearly allowable over the cited references. Claims 2-8 are also allowable in view of the fact that they depend from claim 1, and further in view of the recitation in each of those claims.

Similarly, claim 64 recites a plurality of base stations with a communication range with a radius of more than 1 mile and less than 10 miles as well as a CPE having a receiver to receive communications from the assigned base station and “a transmitter to transmit data to the assigned base station, and an antenna deployed internally within the premise where the CPE is located.” As discussed above with respect to claim 1, the combination of references do not suggest such a network. Engels does not disclose any antenna and any conjecture in the Office Action regarding the performance characteristics of the antenna must be based on the disclosure in its entirety. In view of the fact that Engels proposes a replacement for IEEE 802.11 equipment, the range of any antenna inherently described in Engels is limited to the extremely short range of 10-50 meters and teaches directly away from an antenna capable of communicating with a base station that is 1 to 10 miles away. The combination of references do not suggest a bidirectional communication system where a CPE located 1 to 10 miles from a base station and having an internally deployed antenna can communicate with that assigned base station. For at least these reasons, claim 64 is clearly allowable over the combination of references.

Claims 9-12 stand rejected under 35 U.S.C. § 103(a) as unpatentable by Chambers et al. combined with Engels et al. The applicants respectfully traverse this rejection and request reconsideration. As discussed above, with respect to claim 1, Chambers is directed to a bidirectional communication network having, preferably, a coverage area of 1,000-2,000 feet. Thus, the low power microcellular network of Chambers is ill-suited for communication over a range between 1-10 miles. Similarly, Engels is a hypothetical design for a high speed replacement for IEEE 802.11. As is

known in the art, IEEE 802.11 is a very short-range communication system for applications such as an in-home network. Engels does not even discuss an antenna. However, any antenna inherently disclosed by Engels would be an extremely short-range (i.e., 10-50 meters) antenna incapable of communication over a range of 1-10 miles, as recited in claim 9. Accordingly, claim 9 is clearly allowable over the combination of Chambers et al. and Engels. Claims 10-16 are also allowable in view of the fact that they depend from claim 9, and further in view of the recitation in each of those claims.

Claims 60-63 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Chambers et al. and Schreiber et al. The applicants respectfully traverse this rejection and request reconsideration. Claim 60 is directed to a wireless system having a plurality of CPE units and a plurality of base station units wherein the plurality of CPE units and the plurality of base station units "are arranged in a sectorized configuration, wherein each of the plurality of base station units is configured to communicate with at least 250 CPE units in each sector and wherein each sector has a radius of less than 10 miles." As previously discussed, the combination of Chambers et al. and Schreiber et al. is inappropriate because they are not combinable references. That is, Chambers et al. is directed to a short-range bidirectional communication system while Schreiber et al. is directed to a longer-range one-way transmission system. Nothing in the references suggests such a combination. Thus, the motivation to combine references asserted in the Office Action, at page 6, is an unsupported assertion with no basis in the references. The applicants respectfully request that the Examiner point to objectively verifiable evidence or supply an affidavit setting forth the objectively verifiable evidence of such a motivation to combine or modify. In the absence of objectively verifiable motivation to modify or combine the art of record to reach the applicants' claims at issue, no *prima facie* case of obviousness has been established. Accordingly, the applicants respectfully request the Examiner allow claims 60-63 for at least this reason.

Even if one were to combine the references in the manner suggested in the Office Action, they do not teach or suggest the claimed invention. Specifically, Chambers describes a system in which each base station is configured to connect to a

number of subscribers preferably in the range of 10-100. (See column 3, lines 8-12.) Given the three sectors described at column 7, lines 1-5, Chambers et al. is intended, preferably, to communicate with approximately 3-33 users per sector. Schreiber does not address this issue at all as Schreiber et al. is a one-directional transmission system and does not support bidirectional communication. The combination of references does not teach or suggest the base station being configured to communicate with at least 250 CPE units in each sector, as recited in claim 60. Accordingly, claim 60 is clearly allowable over the cited references. Claims 61-63 are also allowable in view of the fact that they depend from claim 60, and further in view of the recitation in each of those claims.

Claims 2-3 and 65 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Chambers et al., Schreiber et al., Engels et al., and a publication by Vook et al. The applicants respectfully traverse this rejection and request reconsideration. Claims 2 and 3 depend from claim 1, which has already been discussed in detail above. Namely, the combination of Chambers et al., Schreiber et al., and Engels do not teach or suggest the network of claim 1. The addition of Vook et al. as a fourth reference does not overcome this serious deficiency. Furthermore, the Office Action asserts that Vook et al. discloses a system that "shows a BER of 10×10^{-6} ". However, claim 2 recites a BER that is ten times better than that suggested in the Office Action (i.e., 1×10^{-6}). Furthermore, claim 2 recites a signal modulation scheme "that requires less than 10 dB signal-to-noise ratio (SNR) protection to achieve a 10^{-6} bit error rate." An examination of Figure 3 of Vook shows that none of the modulation schemes remotely approaches a BER of 10^{-6} at a signal-to-noise ratio of 10 dB. The best result illustrated in Figure 3 for 10 dB SNR is a BER of approximately 5×10^{-2} . Thus, Vook does not teach or suggest the network of claim 2. Accordingly, claim 2 and dependent claim 3 are clearly allowable over the combination of Chambers et al., Schreiber et al., Engels et al., and Vook.

With respect to claim 65, the Office Action impermissibly uses the claim as a roadmap to finding references. In the present case, the Office Action cites Chambers et al. for disclosing a wireless communication network with base stations and consumer premised equipment (CPE), and cites Schreiber et al. as disclosing a coverage range of

more than 1 miles and less than 10 miles, and cites Engels for disclosing a CPE with an internally deployed antenna, and cites Vook et al. for selection of a modulation scheme to achieve a desired bit error rate.

It should be noted at the outset that none of these references provides any suggestion for the combination set forth in the Office Action. The inapplicability of the combination of Chambers, Schreiber, and Engels has already been discussed in detail above. For the sake of brevity, that argument need not be repeated herein. However, it should be noted that Chambers et al. is directed to a short-range bidirectional communication system while Schreiber et al. is directed to a longer-range one-way transmission system. The two systems are designed for different processes and do not lend themselves to the combination suggested in the Office Action. Furthermore, there is no objectively verifiable evidence in either reference to suggest such a combination. Engels is added to the mix as disclosing an internally deployed CPE antenna despite the fact that Engels does not even mention an antenna. Furthermore, as discussed above, Engels discloses a hypothetical design to provide a high-speed replacement for IEEE 802.11. As those skilled in the art will appreciate, IEEE 802.11 is a very short-range system (10-50 meters) and any antenna inherently disclosed in Engels must be considered to have that short range. Thus, Engels does not teach or suggest any antenna system capable of communicating over a distance between 1 and 10 miles, as required by claim 65. Finally, the Office Action cites Vook for disclosing a modulation scheme selected to achieve a desired bit error rate. This is incorrect. The various techniques described in Vook at p. 608 relate to different algorithms for varying the sample matrix inversion (SMI) processing of pilot symbols. However, the only modulation scheme is QPSK. It is not the modulation scheme *per se* that is selected to achieve a desired bit error rate, but the selected SMI algorithm that results in different BERs. Figure 3 illustrates the variations in BER for the different SMI processes. These are not the equivalent of different modulation schemes. Thus, even if the references were combined in the manner suggested in the Office Action, it does not teach or suggest the network of claim 65. Accordingly, claim 65 is clearly allowable over the combination of Chambers et al., Schreiber et al., Engels, and Vook.

Claim 4 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Chambers et al., Schreiber et al., Engels et al., and a publication by Fong et al. The applicants respectfully traverse this rejection and request reconsideration. The inapplicability of the combination of Chambers et al., Schreiber et al., and Engels has already been discussed in detail above. For the sake of brevity, those arguments need not be repeated herein. However, it should be noted that nothing in those references provides an objectively verifiable suggestion to modify or combine the references in the manner asserted in the Office Action. Similarly, nothing in any of the references suggests the combination of Fong to Chambers et al., Schreiber et al., and Engels. The applicants respectfully request the Examiner to point to some objectively verifiable evidence in any of these references that suggests the modification and/or combination asserted in the Office Action. In the absence of such objectively verifiable evidence, there is no *prima facie* case of obviousness and claim 4 is allowable for at least this reason.

Even if the references were combined in the manner suggested in the Office Action, they do not suggest the network of claim 4. The Office Action states that Fong discloses reusing channels in adjacent base stations. However, the Office Action fails to note that Fong is limited to an application using time division multiple access (TDMA). Fong notes that the process is technologically unfeasible for CDMA and does not even address OFDM, which is recited in independent claim 1 of the pending application. Furthermore, the frequency re-use is only effective in TDMA in Fong because of a technique referred to in Fong as staggered resource allocation (SRA) in which allocated time slots are used to coordinate transmissions among the various base stations so as to avoid interference. (See abstract and pages 808-809.) Thus, claim 4 is clearly allowable over the combination of Chambers et al., Schreiber et al., Engels, and Fong.

Claim 7 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Chambers et al., Schreiber et al., Engels et al., and by UK Patent No. GB 2 319 709 A referred to in the Office Action as Deutsche. The applicants respectfully traverse this rejection and request reconsideration. The inapplicability of the combination of Chambers et al., Schreiber et al., and Engels has already been

discussed above with respect to claim 1. Namely, nothing in those references suggests the combination asserted in the Office Action. Similarly, nothing in Deutsche suggests the combination with the three prior named references. It appears that Deutsche is provided simply because one small portion of the specification indicates a spectral efficiency of "about 0.75 bit/s/Hz per channel." (See p. 5, lines 6-7.) While it is unclear that "about 0.75" is the equivalent of "at least 0.75" as recited in claim 7, it is clear that the Office Action ignores the remaining description in Deutsche wherein a specific application of digital audio broadcasting and Differentially-Encoded Quadrature Phase Shift Keying (DQPSK) modulation is used. Thus, the application described in Deutsche is not related to a two-way wireless network with base stations, a plurality of CPE installations, with the CPE having an internally deployed antenna, as recited in claim 1. It is a well settled rule of law that the Examiner must consider the teachings of the reference in its entirety, including those portions of a reference that teach away from the claimed invention. In this case, it appears that the only portion of Deutsche that has been considered is the short passage related to a 0.75 efficiency. When considered in its entirety, Deutsche does not suggest combination with the other references and does not teach or suggest the invention recited in claim 7. Accordingly, claim 7 is clearly allowable over the combination of Chambers et al., Schreiber et al., Engels, and Deutsche.

Claims 13-16 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Chambers et al., Schreiber et al., and U.S. Patent No. 6,246,875 to Seaholtz et al. The applicants respectfully traverse this rejection and request reconsideration. The Office Action, at p. 16, states that Claims 13-16 stand rejected as unpatentable over the combination of Chambers et al. and Schreiber et al. as applied to Claims 9-12. However, it should be noted that Claims 9-12 were rejected on the basis of the combination of Chambers et al. and Engels. Accordingly, the applicants will address the rejection of Claims 13-16 on the basis of the combination of Chambers et al. Engels et al., and Seaholtz et al. The inapplicability of the combination of Chambers et al. and Engels has already been discussed in detail above. However, it should be noted that nothing in either reference provides an objectively verifiable suggestion to modify or combine the references in the manner asserted in the Office

Action. Furthermore, even if the combination of references were permissible, they do not suggest the system of claim 9 which has a range between 1-10 miles. As previously discussed with respect to claim 9, both Chambers et al. and Engels are directed to short-range systems. The addition of Seaholtz et al. to this combination does not overcome the serious deficiency of Chambers et al. and Engels. Accordingly, claim 13 is clearly allowable over the combination of Chambers et al., Engels, and Seaholtz et al. Claims 14-16 are also allowable in view of the fact that they depend from claim 13, further in view of the recitation in each of those claims.

In view of the above amendments and remarks, reconsideration of the subject application and its allowance are kindly requested. The applicants have made a good faith effort to place all claims in condition for allowance. If questions remain regarding the present application, the Examiner is invited to contact the undersigned at (206) 628-7640.

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